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Aggressive behavior and the perception of violence.

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AGGRESSIVE BAHAVIOR AND THE PERCEPTION OF VIOLENCE

A Thesis Presented

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Aggressive Behavior and the Perception of Violence

Carl Rogers (1965) stated that "the organism reacts to the field as it is experienced and perceived. This perceptual field is, for the individual, 'reality'." Thus, according to phenomenological theory, experience and perception determine reality and consequently behavior. The present study tests the assumption that perception is related to behavior. The validity of the a perception of violence task as a predictor of rated aggressive behavior is tested. Sex is included as an independent variable because no data are available on sex differences for perception of violence.

When each eye is simultaneously presented a different stimulus, only one stimulus is usually perceived. This phenomenon, named binocular rivalry, has been utilized to study perceptual processes. Engel (1956) found that when two male faces were presented in a stereoscope with one inverted and the other in the normal position, over 90% of the subjects reported seeing only the upright face. This technique was employed by Bagby (1957) to study perceptual differences between Americans and Mexicans. The subjects perceived the scene from their own culture instead of the other in a binocular rivalry situation. The perception of race was researched in South Africa by using binocular rivalry, (Pettigrew, Allport, and Barnett, 1958). The results revealed that whites, unlike other racial groups tested, perceived the race of faces presented in binocular rivalry as either white or black. They did not normally perceive mulatto or oriental faces which were also presented. Beloff and Beloff (1959) found that people rated pictures of themselves higher than controls for attraction in binocular rivalry when unaware that they were viewing themselves. Binocular

rivalry research (Lo Scuito and Hartley, 1963) revealed perceptual diffrences between Jews and Catholics for religious words and symbols. Toch and Schulte (1961) found that second year police trainees perceived violence significantly more than new police trainees or college students. Shelley and Toch (1963) utilized the perception of violence in binocular rivalry to predict prison adjustment. At a minumum security prison all inmates were tested for their perception of violence. Prisoners who scored one standard deviation above the prison mean for the perception of violence were matched for age and race with other prisoners who were low perceivers of violence. The two groups did not differ significantly on Rorschach, TAT, House-Tree-Person Drawings, or staff ratings of prison adjustment. However, as hypothesized, more of the high perceivers of violence broke prison rules or escaped. Seven of 11 of the high perceivers as compared with 1 of 11 controls engaged in antisocial behavior which caused their transfer to higher security institutions.

Berkowitz, in Aggression, cited several experiments on aggression involving individual perception. Pastore (1952) found that frustration does not necessarily produce hostility as originally hypothesized by Dollard and Miller (1939). He presented college students with hypothetically frustrating situations. Subjects reacted with significantly higher hostility to arbitrary, unjustifiable frustration than to nonarbitrary, justifiable frustration. The example given for arbitrary frustration is a bus driver deliberately not stopping for a passenger. Non-arbitrary frustration is demonstrated by the same bus driver not stopping for a passenger because he is off duty and has a GARAGE sign lighted. Berkowitz states that the perception of the situation determines which drives are

thwarted and the intensity of the response.

Janis (1951) reported that among the survivors of Hiroshima and Nagaasaki, the dominant reaction towards the United States was acute fear instead of anger. Berkowitz theorizes that fear is greater than anger in this situation partially because the frustrated survivors perceive themselves as powerless relative to the frustrating agent, the United States. Thus, perception of the situation may determine if anger or fear is provoked. Whiting (1944), an anthropologist who studied the Kwona of New Guinea, shares Berkowitz's interpretation of the frustration-aggression hypothesis. He also postulates that an individual's definition of the situation, his perception, determines which goal directed action is blocked during frustration and which response is elicited. Therefore, frustration does not always evoke aggression. Individual perceptual - interpretation processes must be considered.

The result of Shelley and Toch (1963) that the perception of violence is an indicator of prison adjustment stimulated the hypothesis that perception of violence is a valid diagnostic measure for aggression proneness among a more normal population. Berkowitz's analysis of some aggression research supports the hypothesized relation between perception and aggressive behavior. This experiment tests the concurrent validity of the binocular rivalry test for perception of violence as a measure of aggressiveness. It is hypothesized that the readiness to perceive violence is directly related to a dispostion for violent and aggressive behavior. The issue of causality between perception and behavior is not explored in this experiment, only the correlation between perception and behavior is researched.

Because no generally accepted assessment instruments of aggressiveness exist, dual criteria of aggressiveness are utilized. The Buss-Durkee Aggression Inventory (Buss and Durkee, 1957), a self report measure of aggressive traits, and a peer rating of aggressive behavior provide parallel assessments of the same individual made be different agents. Neither of the instruments are assumed to have high validity. However, the dual criteria should increase validity be only selecting individuals whose aggressiveness is extreme on both measures. The construct validity for these instruments is presumed to be additive.

The hypotheses of this study are as follows:

1) Individuals who are "high aggressive" on their combined self report and peer ratings perceive more violence in binocular rivalry than individuals "low aggressive" on the combined measures.

The hypothesis tests the concurrent validity of the perception of violence as a correlate of aggression, using two independent measures of aggression. According to Cronbach and Meehl (1955), correlations between the measure and criterion measures are adequate tests of concurrent validity. Although the hypothesis tests group differences, it is an alternative test of correlation as recommended by Meyers (1966) because measures on the dependent variable, perception of violence, for over 80% of the population are not practical to obtain.

2) Self reports of aggression are lower for females than for males. Previous research by Jersild and Markey (1935), Sears, et al (1957), and Lansky, Crandall; Kagan, and Baker (1961) indicates that females are less aggressive than males. Self description of aggressiveness on the Buss-Durkee Aggression Inventory should replicate this previous research.

Peer ratings of aggression are not utilized to test for sex differences in aggression because they are made by rank ordering members of the same sex. These peer ratings are relative to members of the same sex and therefore would not reflect absolute differences in aggression between sexes.

3) Males perceive more violence than females.

Since males are more aggressive than females and aggression is positively correlated with perceived violence, therefore, males perceive more violence than females.

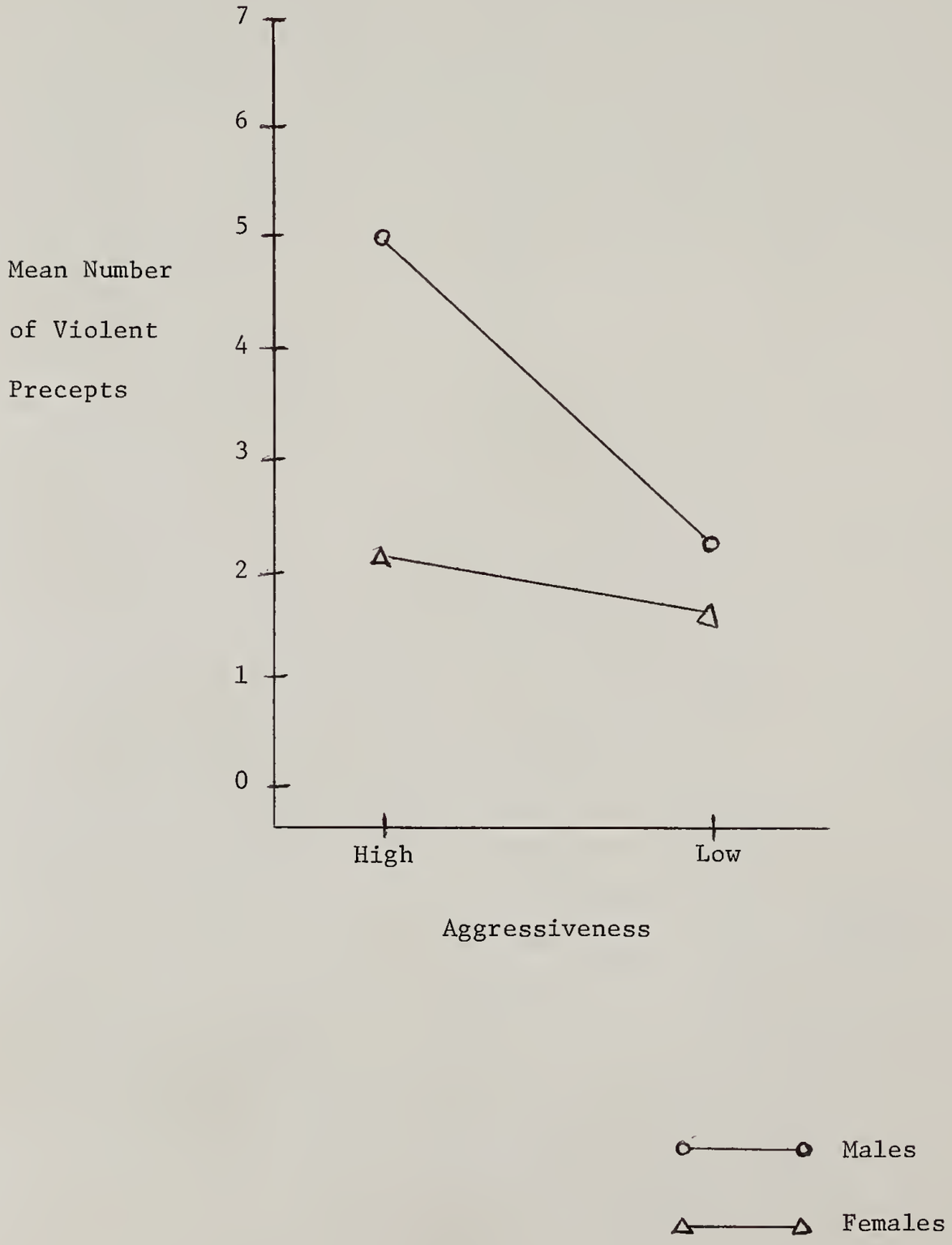
4) There is an interaction between sex and aggression for the perception of violence, as diagramed in Figure 1.

High and low aggressive vales are expected to differ markedly in their aggressive behavior. However, high and low aggressive females should not differ as greatly in aggressiveness as males. Such factors as role models inhibiting overt aggression, cultural norms proscribing aggressive behavior and other aspects of social learning may suppress aggressiveness in females. Therefore, the relation between aggression and perception of violence that is expected for males is not predicted for females because females may be too homogeneous in aggression. This relation should appear as an interaction between sex and aggression for the perception of violence.

An appropriate response measure for the perception of violence is essential. Toch (1961, 1963) requested verbal descriptions of the violent stereograms. However, in an experiment in perceptual defense, verbal description of stimuli often differed from less direct measures of the perceptions such as semantic differential responses (Myron, 1967). The scenes of shootings, hangings, and stabbings utilized by Toch and in this

Figure 1

Hypothesized Group Means for the Number of Violent Percepts Depicted by Sex and Degree of Aggressiveness



research could be considered anxiety provoking and defense arousing. Therefore, the written descriptions of the perceptions utilized as the dependent variable in this study may not reflect the content of the percept. Because the semantic differential is a more indirect, less threatening measure than written descriptions of the potentially violent perceptions, ratings of the percepts on the evaluative dimension of the semantic differential are the second type of dependent variable. Hypotheses 1, 3, and 4 are tested with both written description and semantic differential ratings as the dependent variables.

The latency of response between the presentation of the stereograms and written response is timed to explore the possibility of a time-consuming perceptual defense or response defense process occurring in binocular rivalry situations. These defenses may be provoked when subjects are required to make anxiety arousing descriptions of violent scenes. In binocular rivalry, students are confronted with violent and neutral scenes. Giving a nonviolent, sometimes incorrect description of the percept is theorized as a defensive alternative to reporting the violent scene. Nonviolent responses may be the result of time consuming defensive processes. This hypothesis is tested as follows:

5) The latency of response is longer for nonviolent percepts than for violent percepts.

Method

Subjects. Three hundred thirty-five undergraduates in several psychology classes completed the Buss-Durkee Aggression Inventory and were asked to return 3 Peer Rating Forms. Two hundred sixteen students, 141 female and 75 males, returned at least 2 Peer Rating Forms. The subjects for the binocular rivalry experiment were 13 males and 13 females whose scores for aggression were in the upper quartiles of the distribution of scores on both instruments and 13 males and 13 females whose aggression scores were in the lower quartiles on both instruments. The quartiles were based on data from the original sample of 129 females and 54 males. This sampling did not produce enough subjects in the extreme quartiles on both instruments. Therefore, the sample was expanded from 183 to 216 to provide a sufficient number of subjects.

Because of the shortage of subjects at the end of the experiment, several males whose Buss-Durkee scores were in the extreme quartiles participated in the perception experiment prior to obtaining their Peer Ratings. The data from the perception experiment was only used if the subject's Peer Ratings, (subsequently obtained) were also in the same high or low quartile of aggressiveness as their Buss-Durkee scores.

Measures. The Buss-Durkee Aggression Inventory and the Peer Rating Form of aggressiveness, developed by the experimenter, were used to select individuals extreme in aggressiveness. The Buss-Durkee Aggression Inventory is a 72 item true-false questionnaire. Buss and Durkee (1957) factor analysized the items and found an "aggression factor," a "hostility factor," and a "guilt factor." The "aggression factor" scores

were used to select Ss extreme in aggressiveness. The potential range of scores on this factor is 0 - 32. The sample range for males was 6 - 31, with a median of 15.0, a mean of 17.35, and standard deviation of 6.39 for the 75 individuals tested. The sample range for the 141 females tested was 7 - 28, with a median of 14.0, a mean of 15.18, and standard deviation of 4.97. (Appendix 1 contains the Buss-Durkee Aggression Inventory.)

The Peer Rating Form is completed by a friend of the student of the same sex and approximate age. The rater was asked to list the first names of 10 friends of the same sex and age, including the person who gave the rater the form. The rater then rank ordered the 10 people for aggressiveness according to a definition of aggression derived from Buss (1957). The rater assigned a rank, from 1-10 to all 10 friends. A rank of one is given to the most aggressive of the ten people, a rank of 2 is given to the second most aggressive person, etc. Only the rank assigned to the person who gave them the form was recorded on the Peer Rating Form. Since only the one rank was recorded, the identities of the other friends remained anonymous to everyone except the rater. The rater was also requested to rate three one-dimensional, 5 point Likert scales for the intensity of physical, verbal, and indirect aggression displayed by the person being rated. The Peer Ratings were inverted so that the size of the ratings directly reflects the degree of aggressiveness. The potential range of rankings for aggression is 1.0, the least aggressive, to 10, the most aggressive. The mean rankings for aggression of males by 2 or 3 raters ranged from 1.0 - 9.5, the median was 4.4, the mean was 4.89 and the standard deviation was 2.13. The mean rankings for female

ranged from 1.3 - 9.0, the median was 4.6, the mean was 4.61, and the S.D. was 1.93. (Appendix 2 contains a Peer Rating Form with complete instructions.)

An Engel stereoscope with a Hunter timer was used to present stereograms in binocular rivalry. Eleven stereograms developed by Toch (1961) were employed. Seven stereograms pair a violent scene with a neutral scene. The scenes are matched for area and diagonality. The remaining stereograms were 2 neutral stereograms in nonrivalry, i.e., the same picture is presented to both eyes, and 2 nonviolent scenes in binocular rivalry. The latter were omitted from the analysis because their content was sexual but nonviolent. (Appendix 3 contains reproductions of the stereograms.)

A 9 item semantic differential was developed by the experimenter from data by Osgood (1957). The evaluative, activity, and potency dimensions of the semantic differential are composed of 3 pairs of bipolar adjectives. The scale is balanced for response trends and the items are randomized. At the top of each Semantic Differential Form is a large space where written descriptions of the scenes are recorded before rating the percept on the semantic differential. (Appendix 4 contains a copy of the Semantic Differential Form.)

A stop watch and a recording form were used to measure latency of response.

Procedure. A confederate of the experimenter asked several psychology classes to participate in an experiment designed to test the validity of two aggression instruments to earn extra credit in their classes. In class,

335 students completed the Buss-Durkee Aggression Inventory. To complete the experiment, which was purported to be a validation study of the Buss-Durkee Aggression Inventory, each student was requested to ask 3 of their friends of the same sex and age to rate them for aggressiveness on the Peer Rating Form. The ratings were sealed in an envelope by the raters and returned to the psychology student who returned the Peer Ratings to class. Two hundred-sixteen students returned at least two Peer Rating Forms. The experimenter did not participate in this data gathering to prevent students from associating the aggression experiment with the perception experiment.

The Buss-Durkee Aggression Inventory was scored on the 32 item "aggression factor" and the two or three peer rankings of aggression were averaged for each subject. The Buss-Durkee scores and the Peer Rankings were rank ordered separately for each sex to produce a total of 4 distributions. The upper and lower quartiles were identified for each distribution. See Table 1 for quartile cutoff scores. Subjects whose scores were in the upper quartiles on both instruments for their sex or in the lower quartile on both instruments for their sex became the high and low aggressive experimental groups for the perception experiment, respectively. These students were identified by their student number, which was used in the aggression experiment, and were contacted by the experimenter to solicit participation in a perception experiment. The students were told that they had been randomly selected from their psychology classes. Extra credit was offered to them for participation. They were unaware of any relation between the aggression research and the perception experiment.

Thirteen Ss from each of these groups participated in the perception

Table 1

Buss-Durkee Aggression Inventory and Peer Rank Ordering Cutoff Scores at Extreme Quartiles for Each Sex.

	Total N	Buss-Durkee	Peer Rankings
Females	129		
Upper Quartile		$\geq$19	$\geq$6.0
Lower Quartile		$\leq$11	$\leq$3.0
Males	54		
Upper Quartile		$\geq$21	$\geq$6.4
Lower Quartile		$\leq$12	$\leq$3.3

study: high aggressive males, low aggressive males, high aggressive females, and low aggressive females. Each S in the perception experiment was tested separately by the experimenter. He was told that the experiment studied "the perception of objects under very brief illumination." The stereoscope was adjusted to each person's fusion point, the distance from the eyes at which objects shown to each eye merge, by changing the distance of the stimuli until the S reported that a vertical and horizontal line shown to each eye formed a cross. For all trials, the stereograms were presented for .5 seconds. The Ss wrote a description of the scene and then completed a semantic differential form. The time between the presentation of the scene and the initiation of responding was recorded by the experimenter as the latency of response measure. On the first and second trials, neutral scenes were presented in nonrivalry to reinforce the deception that only one picture was being shown. Starting with the third trial, the 7 violent-neutral stereogram pairs and the 2 nonviolent stereograms were presented in the same order for all Ss. Each stereogram was presented a second time, reversing the eye to which the violent scene was first presented to control for eye dominance. Each S viewed 20 scenes, 14 containing violence. If the S was unable to make any identification of the stereogram, he was allowed to view it a second time. After the experiment, the S was asked his idea of the purpose of the experiment. No one realized the relation with the aggression experiment nor that he had been viewing scenes in binocular rivalry. The S was told that the research explored how people rated violence. The binocular rivalry phenomena was not revealed to him.

Treatment of the Data. The relation between the two independent measures of aggression was analyzed to determine the construct validity of these measures as criteria of aggressiveness. According to Cronbach and Meehl (1955), correlations with other measures of the same construct are adequate tests of construct validity. The Buss-Durkee Aggression Inventory and peer ranking correlate .40, 215 df, $p<.001$. This substantial correlation between the independent measures of aggression support the assumption that they measure the same construct and are valid instruments. (Appendix 5 contains additional data on the relationship between the independent measures of aggression.) Therefore, it was justified to define students whose scores were in the same extreme quartile on both instruments as high or low aggressive with high confidence that a true difference in aggressiveness exists between groups.

Each written response was categorized as either violent, neutral, fusion, or alternative. To be categorized as violent, the response must have unequivocally described the violent scene, including the violence. Similarly, a neutral response must have definitely described the neutral sterogram. A fusion response contained elements of both scenes, although violence could be included. An alternative response did not definitely describe either the neutral or violent scene. Some alternatives were mistakes; others described the violent scene but omitted the violence. The following are examples of each type of response for scene 10 in Appendix 3:

Violent - "A man stabbing another man who is falling back."

Neutral - "A man working at a machine."

Fusion - "A man working at a machine with someone standing behind him."

Alternative - "Two men shaking hands."

Seven hundred twenty-eight responses were categorized by the experimenter. Another rater independently rated 25% of these responses. Interrater reliability for violent percepts was .99, for neutral percepts was .92, for fusion percepts was .89, and for alternative percepts was 1.00.

The number of violent scenes described was recorded as the primary dependent variable. The potential range was from 0 to 14 violent scenes reported. The number of other types of responses was also recorded and used in analyses of group differences in responses.

The semantic differential was scored for each trial. The sum of the ratings on the 3 items for each dimension ranged from 3 to 21. High ratings reflected the good, strong, and active directions on the evaluative, potency, and activity dimension of the semantic differential, respectively. Ratings on these dimensions for the 14 violent-neutral scenes were totaled for each student.

The mean latency of response for violent and nonviolent responses was computed for each subject.

The experiment is a 2 x 2 design, sex x aggressiveness. Analysis of variance was used to test hypotheses 1, 3, and 4, the aggression, sex, and sex x aggression interaction effects in the perception of violence respectively. A one tailed t test was used to test hypothesis 2, "self reports of aggression are lower for females than for males." A matched t test was used to test the difference in ratings on the evaluative dimension of the semantic differential between violent and nonviolent percepts. The longer latency of response for nonviolent percepts than for violent percepts, hypothesis 5, was tested with a one tailed matched t test.

Table 2

Summary of the Group Means for Violent, Neutral, Fusion and Alternative Percepts as a Function of Sex and Degree of Aggressiveness

Type of Percept

Violent

Aggressiveness	male	female	
high	5.154	3.384	4.269
low	2.923	2.923	2.923
	4.038	3.154	3.596 = $\bar{x}$

Neutral

Aggressiveness	male	female	
high	6.231	7.538	6.885
low	6.231	7.385	6.808
	6.231	7.462	6.486 = $\bar{x}$

Fusion

Aggressiveness	male	female	
high	1.308	.385	.846
low	2.154	.846	1.500
	1.731	.615	1.73 = $\bar{x}$

Alternative

Aggressiveness	male	female	
high	1.308	2.692	2.000
low	2.692	2.769	2.769
	2.00	2.769	2.385 = $\bar{x}$

Table 3

Summary of Analysis of Variance of the Number of Violent Percepts as a Function of Sex and Degree of Aggressiveness

Source	df	MS	F
Aggression	1	23.557	5.369**
Sex	1	10.173	2.318*
Sex x Aggression	1	10.173	2.318*
Ss	48	4.387	

**p<.025

*p<.20

Results

Table 2 furnishes the mean number of each type of percept for each group. The high aggressive group gave more violent responses, and fewer fusion and alternative responses than the low aggressive group. Males gave more violent and fusion responses and fewer neutral and alternative responses than females.

The concurrent validity of the perception of violence was tested by comparing the number of written violent percepts for high aggressive students versus low aggressive students. An analysis of variance was performed which included sex as a second variable. Table 3 summarizes the results. As predicted, high aggressive students perceived more violence in binocular rivalry than low aggressive students, $F_{1,48} = 5.369$, $p<.025$. A one tailed t test of the differences between the group means revealed that high aggressive males perceived more violence than low aggressive males, $t_{25} = 2.677$, $p<.01$. High and low aggressive females did not differ in the perception of violence, $t_{25} = .615$, ns.

The hypothesis that females are less aggressive than males, as measured on the Buss-Durkee Aggression Inventory, was confirmed, $t_{214} = 2.55$, $p<.025$. However, Table 3 revealed an insignificant ($p<.20$) sex difference for the written description of violent percepts, thus failing to support the predicted sex difference. Although males are more aggressive on a self report measure, they do not report significantly more violence than females. It was theorized that perception of violence is more strongly related with aggressiveness for males than for females. An interaction effect between aggression and sex for the perception of violence was hypothesized to test

Figure 2

Group Means for the Number of Violent Percepts Depicted by Sex and Degree of Aggressiveness

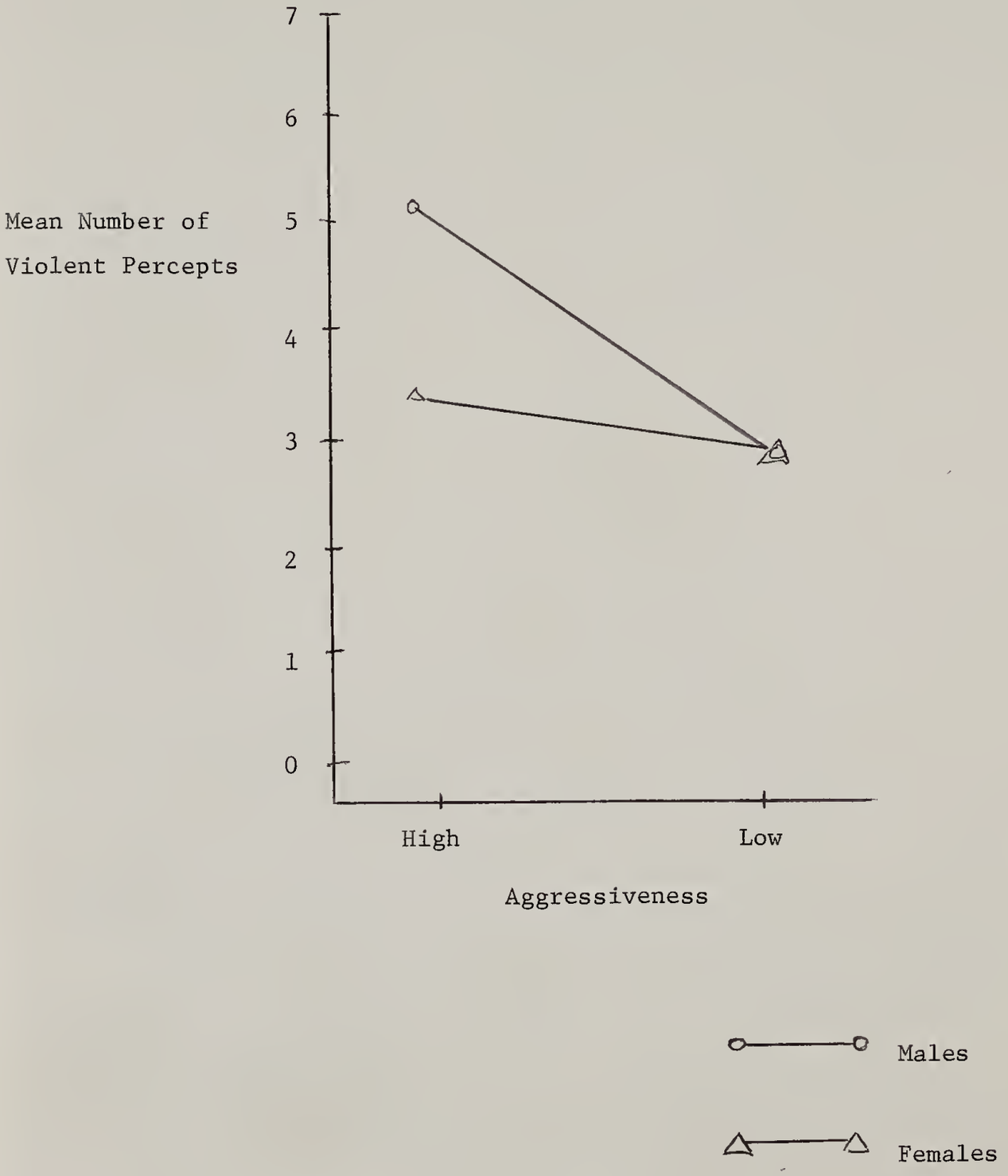


Table 4

Summary of the Analysis of Variance of the Number of Neutral Percepts as a Function of Sex and Degree of Aggressiveness

Source	df	MS	F
Aggression	1	.077	.0135
Sex	1	19.692	3.463*
Sex x Aggression	1	.079	.014
Ss	1	5.686	

* $p<.10$

Table 5

Summary of the Analysis of Variance for the Number of Fusion Percepts as a Function of Sex and Degree of Aggressiveness

Source	df	MS	F
Aggression	1	5.557	3.546*
Sex	1	16.173	10.319**
Sex x Aggression	1	.481	.306
Ss	48	1.567	

* $p<.10$

** $p<.005$

Table 6

Summary of the Analysis of Variance for the Number of Alternative Responses as a Function of Sex and Degree of Aggressiveness

Source	df	MS	F
Aggression	1	7.692	2.307
Sex	1	7.6923	2.307
Sex x Aggression	1	4.923	1.476
Ss	48	3.333	

this theory. Figure 2 is a diagram of the means for the four groups. From observation, the group trends appear nonparallel, but the F test of the interaction did not reach significance ($p<.20$).

Analyses of variance were also performed to test for differences between the groups for other types of written responses. Tables 4, 5, and 6 present the analyses for the number of neutral, fusion, and alternative responses respectively as the dependent variable. Only one significant difference in types of responses was found. A sex difference for fusion responses, $F_{1,48} = 10.319$, $p<.005$, revealed that males gave significantly more responses with elements of both violent and neutral content than females.

To assess the utility of the perception of violence as a selection device of aggression-prone people, the cutoff scores of violent percepts between high and low aggressive students were calculated. Ten of 13 (77%) high aggressive males reported at least 5 violent scenes. Nine of the low aggressive males (69%) reported less than 5 violent scenes. For females, a score of 5 or more violent written descriptions identified 5 (38%) of the high aggressive group while 11 (85%) of the low aggressive group reported less than 5 violent percepts. Thus, a median cutoff score for the perception of violence would identify 73% of the males and 62% of the females accurately, but it would misclassify 62% of the high aggressive females. Other cutoff scores are even less useful in discriminating aggressiveness in females. Therefore, the perception of violence task may be useful to screen males but not females for extreme aggressiveness.

In addition to the written responses for each scene, a semantic differential was completed. The use of ratings on the evaluative dimension

Table 7

Mean Total Ratings on the Evaluative Dimension of the Semantic Differential as a Function of Sex and Degree of Aggressiveness

Aggressiveness	Sex: Male	Sex: Female	
High	139.46	157.46	148.46
Low	148.307	161.69	155.00
	143.884	159.57	151.73 = $\bar{X}$

Table 8

Summary of the Analysis of Variance of Ratings on the Evaluative Dimension of the Semantic Differential of Total Violent Content as a Function of Sex and Degree of Aggressiveness

Source	df	MS	F
Aggression	1	555.76	1.072
Sex	1	3201.23	6.177*
Sex x Aggression	1	69.23	.133
Ss	48	518.25	

*p<.025

on the semantic differential as a measure of the perception of violence was supported by a very strong, consistent difference between ratings on the evaluative dimension for violent and nonviolent percepts, matched $t_{47} = 20.65$, $p<.001$. In a range from 3-21 for this dimension, violent percepts were rated 5.7 points lower on the average than nonviolent scenes. This means that violent percepts were connotatively more negative in the minds of the subjects. Therefore, ratings on the evaluative dimension are a sensitive reflection of perceived content.

Because some students may have hesitated to report violent perceptions in a written description, total ratings of the scenes on the evaluative dimension of the semantic differential were utilized as a dependent variable to be an indirect measure of perceived violence. An inspection of the mean ratings on this dependent variable on Table 7 shows that the scenes that were perceived were rated from the most negative to positive by high aggressive males, low aggressive males, high aggressive females and low aggressive females, respectively. From the assumption that negative ratings of scenes reflect violent content in the scenes, it is assumed that high aggressive males perceived the most violent content and low aggressive females perceived the least amount of violent content. The analysis of variance of evaluative dimension ratings, summarized on Table 8, reveals that sexes differ significantly, $F_{1,48} = 6.177$, $p<.025$ in their ratings of the scenes they perceived. Males rated the scenes more negatively than females. However, no difference exists between high and low aggressive students on their evaluative ratings of the content of their perceptions.

The results of the evaluative dimension, an inferred measure of violent perceptions, revealed a sex effect but no aggression effect. This

Table 9

Mean Number of Reported Perceptions
with any Violent Content
as a Function of Sex and Degree of Aggressiveness.

Aggressiveness	Sex: Male	Sex: Female	
High	1.154	3.923	5.038
Low	4.615	3.230	3.923
	5.384	3.576	4.481 = $\bar{X}$

differs from the analysis of the written reports of violent percepts which disclosed an aggression effect but no sex effect. Therefore, a further analysis was performed to clarify the results. The violent percepts utilized as the original dependent variable were defined as "unequivocally describing the violent scene, including the violence." However, many responses that contained violence were classified as fusion or alternative responses and were not used in the original analysis because they did not describe only the violent scene. To utilize all the violence that was reported, the fusion and alternative responses were redefined in 4 categories, fusion-violent, fusion-neutral, alternative-violent, and alternative-neutral. The violent or neutral classification represents the content of the percept. Fusion or alternative indicate the type of percept.

The number of fusion-violent, alternative-violent, and violent percepts were summed to obtain the total number of scenes that contained any reference to violence. This new dependent variable measures content of the perceptions, not the type of the percepts. The means for the groups on this variable are shown on Table 9. The rankings for the groups from top to bottom are the same as for the evaluative dimension of the semantic differential in Table 7: high aggressive males, low aggressive males, high aggressive females, and low aggressive females. Table 10, the analysis for total violent content, reveals a significant sex effect, $F_{1,48} = 8.027$, $p<.01$, and an aggression effect that just fails to reach accepted levels of significance, $F_{1,48} = 3.056$, $p<.10$. T tests between high and low aggressive males, $t_{25} = 1.943$, $p<.10$, and between high and low aggressive females, $t_{25} = .890$, ns, for total violent content reveal that differences between males accounted for the aggression effect. However, this

Table 10

Summary of the Analysis of Variance for the Total Number of Reported Perceptions with any Violent Content as a Function of Sex and Degree of Aggressiveness.

Source	df	MS	F
Aggression	1	16.173	3.056*
Sex	1	42.48	8.027**
Sex x Aggression	1	2.32	.439
Ss	48	5.291	

*p<.10

**p<.01

difference is not as large as the difference between males for violent percepts in the original analysis. Analyzing total violent content reveals that males perceive more violence than females, as hypothesized but not supported in the analysis of violent percepts alone. However, the difference in perception of violence between high and low aggressive Ss decreases below significance when total violence is considered instead of only violent percepts. Therefore, the type of response, violent, fusion, or alternative, is an important factor in group differences.

The mean latency of response for violent and nonviolent responses is 5.19 and 5.33 seconds respectively. A matched t test of the mean latency of response for violent and nonviolent responses for each S was nonsignificant, $t_{47} = .713$. The average response time to begin a nonviolent response was not significantly longer than to begin a violent response. Therefore, the theory that subjects may utilize a time-consuming defensive process to avoid giving violent responses was not supported by this result.

Summary of results and hypotheses tested.

The following is a brief summary of the experimental hypotheses and tests of significance.

1) "Individuals rated as 'high aggressive' on their combined self report and peer ratings perceive more violence in binocular rivalry than individuals rated as 'low aggressive' on the combined measures." The hypothesis is supported by the analysis of variance for violent percepts, $F_{1,48} = 5.37$, $p<.025$.

2) "Self reports of aggression are lower for females than for males." A t test between mean Buss-Durkee aggression scores supports the hypothesis, $t_{214} = 2.55$, $p<.025$.

3) "Males perceive more violence than females." The hypothesis was not supported by an analysis of the number of violent percepts, $F_{1,48} = 2.32$, $p<.20$. However, the evaluative dimension ratings on the semantic differential differ significantly between sexes, $F_{1,48} = 6.18$, $p<.025$. Similarly, when overall violent content perceived was the dependent variable, the hypothesis was supported, $F_{1,48} = 8.031$, $p<.01$. Therefore, the results confirm the hypothesis at least marginally.

4) "The latency of response is longer for nonviolent percepts than for violent percepts." A matched t test, failed to support the hypothesis, $t_{47} = .71$ ns.

Discussion

The validity of the binocular rivalry technique for postdicting aggressiveness was tested by comparing groups high and low on independent measures of rated behavioral aggression. A significant difference in the perception of violence existed between the aggression groups. This difference was primarily attributable to a significant difference between high and low aggressive males. Although high and low aggressive males differ significantly while high and low aggressive females do not differ in the perception of violence, a significant interaction between sex and aggression was not revealed with this sample of 52 subjects. The results of this study extend from a prison to a college population the conclusion of Shelly and Toch (1963) that the binocular rivalry perception of violence is useful as an indicator of aggressiveness.

In the perception of violence, the significant difference among males but not females may correspond to the qualitative difference in aggression between sexes. High aggressive males are more physically aggressive than high aggressive females. Correlations appearing in Appendix 5 reveal that verbal aggression is the major component of aggressiveness among females and physical aggression is the major component of aggressiveness among males. Females are less distinguishable in physical aggression than the males groups. The difference in the amount of physical aggression observed and experienced may be the critical factor that explains the large sex difference in the relationship between aggression and the perception of violence.

The hypothesized sex difference in the perception of violence was not supported in the analysis of violent percepts. However, when the total

violent content reported was analyzed, a strong sex difference emerged. Males reported more violence than females although some of the responses were fusion of the two stimuli or were equivocal, alternative responses. This sex difference in the perception of violence is not assumed to represent innate differences in perception. Instead, it is interpreted as only reflecting the difference in aggressiveness between sexes. The high and low aggressive groups did not differ significantly in total violence reported. When total violence reported was used for the analysis, the difference between high and low aggressive males that created the aggression effect for violent percepts decreased enough to reduce a significant aggression effect to a trend towards significance. Comparing the group means for violent percepts and total violence reported shows that the low aggressive males increase the most when all violent content is scored. Examining the responses of the low aggressive males reveals that violence is frequently reported in an equivocal, noncommital manner such as this fusion response for scene 20: "A couple fighting or dancing."

The hypothesized interaction between sex and aggression was not supported. The interaction effect for the evaluative dimension and the total violent content were also nonsignificant. The complete absence of an interaction effect in the 3 analyses firmly opposes the hypothesized interaction.

The evaluative dimension of the semantic differential was useful in revealing the sex difference in the reporting of violent content that did not emerge from the original analysis of the violent percepts. The significant relationship between the evaluative dimension and violent responses indicates that the evaluative dimension is a reliable measure of perceived aggressiveness. Responses on the activity and potency dimension

d the violence subscale of the semantic differential did not relate as rongly with violent percepts as did the evaluative dimension, nor did ey discriminate between groups.

The latency of response measure revealed insignificant differences mean response time between violent and nonviolent responses for each oject. However, the observation of certain Ss during testing leads the perimenter to believe that some Ss did actively defend against giving olent responses. Many Ss began their written responses after a short tency but then hesitated for many seconds before finishing the descrip- on. These differences may have been revealed if total response time d also been recorded and analyzed. Differences in total response time y be a better test of the theorized defensive processes than latency of sponse differences.

Another explanation of the latency of response data is that percep- al and response defenses do not occur in the binocular rivalry situation. may not have been defensive in terms of time required to respond. The perimental situation was informal, the experimenter dressed causally. was the same age as the Ss and the content and the type of responses re not extremely threatening. However, as reported for the low aggres- ve males, many Ss were ambiguous and uncertain in their responses. To spond quickly but ambiguously may be defensive. This may be an alterna- ve mode of defense which was not measured by latency response.

An integration of this data indicates that a sex difference exists the reporting of violence and that the perception of violence has con- rrent validity as a measure of aggression among males, but not females. e binocular rivalry phenomenon does not discriminate between high and

low aggressive people just at the perceptual level but also at the response level, where Ss respond with different degrees of ambiguity and confidence. The term perceptual level is used to distinguish viewing a stimulus from publicly describing the stimulus which occurs at the response level. Discussion with the Ss and observations of the Ss leads the experimenter to theorize a dual phenomenon in binouclar rivalry that was not assessed by the dependent variables. Some Ss avoid violence at the perceptual level; they actually do not see the violence. When two Ss who had reported no violent percepts or content were asked if they had seen violence but had not reported it, both were very surprised to learn that any violence had been shown. Believing these Ss, their perception had been governed exclusively by the content of the stimuli. They were disposed not to recognize violence. This is the phenomenon generally reported as binocular rivalry.

However, many other Ss admitted perceiving violence but avoiding to report it because of uncertainty of the perception. For example, a low aggressive male said that he believed that he saw a "mailman with a knife in his back." But he only reported the mailman because he was not confident enough that he had seen a knife to report it. A high aggressive girl reported that she had seen a gun in one scene but had not reported it because she was not certain that she had seen it. These comments and others provide evidence that violence was often perceived but not reported.

The fusion and alternative responses are considered defensive because they were generally ambiguous, uncertain reports of the stereograms. Because the difference between high and low aggressive groups was reduced to nonsignificance by including violent fusion and alternative responses with violent percepts as the dependent variable, differences in types of

esponses instead of differences in perception may account for much of
ne group differences. High aggressive males gave unequivocal, confident
esponses when viewing the ambiguous stimuli. For example, one high ag-
ressive male verbally pondered if the man was dancing with the girl or
itting her in scene 20. He decided the latter and gave an unambiguous
iolent percept: "a man hitting a woman." In contrast, many Ss from
ther groups resolved the dilemma by responding with an alternative, de-
ensive response: "a man hitting or dancing with a girl." High aggres-
ive males may differ primarily from the other groups in their tendency
give unambiguous aggressive responses to vague, uncertain percepts.
ifferences in actual perception may exist, but they are not distinguish-
le on the measures employed in this study. A physiological measure
ch as GSR levels would be necessary to ascertain perceptual versus re-
onse differences.

Summary

This experiment was designed to test the concurrent validity of the perception of violence in binocular rivalry as an indicator of aggressiveness. Sex differences in the perception of violence were also explored.

A pool of 216 undergraduates completed two aggression instruments, the Buss-Durkee Aggression Inventory and a Peer Rating Form for extra credit in their psychology classes. Then 52 students were selected who scored in the upper or lower quartiles of the distributions of scores on the aggression tests for their sex. Thirteen students were in each of four groups: high aggressive males, low aggressive males, high aggressive females, and low aggressive females. The students were unaware that they had been asked to participate in a perception experiment because of their scores on the aggression tests taken a few weeks before. Students were tested separately. They viewed 20 stereograms presented individually in a stereoscope for .5 seconds each. Fourteen of the stereograms paired a violent scene with a matched neutral scene. After viewing each scene, the students wrote a description of the scene and rated its content on a semantic differential. The latency of response between presentation of the stereograms and initiation of response was recorded.

The written responses were categorized as either violent, neutral, fusion, or alternative. The major dependent variable was the number of violent scenes described. The total ratings on the evaluative dimension of the semantic differential was another dependent variable. A third dependent variable was formed by scoring all references to violence by each subject regardless of the type of response.

The major hypotheses of the study were confirmed. 1) High aggressive
ple perceive more violence than low aggressive individuals. 2) Males
ceive more violence than females. However, this sex effect is ambigu-
because it was not supported by the primary dependent variable, the
ber of violent percepts. Hypothesized interaction effect between sex
aggression for the perception of violence was not supported. The hy-
hesis that the mean latency of response for nonviolent responses would
greater than for violent responses also was not confirmed.

The binocular rivalry test of perceived violence is a valid instru-
t for predicting aggressiveness in males. The results of this experi-
t indicate the perception of violence is a promising screening device
identifying males who are prone to behave aggressively. Differences
the amount of physical violence observed and experienced was offered
a possible explanation of the finding that perception of violence and
ression are related in males but not in females.

From observation of the students and discussions with them, the ex-
imenter theorizes that binocular rivalry is a dual phenomonon. Both
ception of stimuli and reporting of stimuli are involved. Some students
not see violence when it was presented to them; this is the perceptual
el effect. Other students admitted seeing violence but not reporting
because of uncertainty; this is the response level effect. Although
dents may differ in the actual seeing of violence, differences in the
ner of reporting the percepts also appears to contribute to group dif-
ences in the perception of violence. More sensitive measures are nec-
ary to discriminate between perceptual and response differences that
ur in binocular rivalry experiments.

The phenomenon of binocular rivalry is not clearly understood. Research is need to distinguish between perceptual and response differences that exist. Perception and behavior are correlated but the issue of causality between perception and behavior is unresolved. Most research in this area has been limited to correlational studies. Antecedent variables such as exposure to physical violence, reinforcement of aggression, and reinforcement of violent perceptions should be manipulated in an experiment to clarify this relationship.

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Appendix 1

Buss-Durkee Inventory

I am a student at the University of Massachusetts.

I seldom strike back, even if someone hits me first.

I sometimes spread gossip about people I don't like.

Unless somebody asks me in a nece way, I won't do what they want.

I lost my temper easily but get over it quickly.

I don't seem to get what's coming to me.

I know that people tend to talk about me behind my back.

When I disapprove of my friends' behavior, I let them know it.

The few times I have cheated, I have suffered unbearable feelings of remorse.

Once in a while I cannot control my urge to harm others.

I never get mad enough to throw things.

Sometimes people bother me just by being around.

When someone makes a rule I don't like, I am tempted to break it.

Other people always seem to get the breaks.

I tend to be on my guard with people who are somewhat more friendly than I expected.

I often find myself disagreeing with people.

I sometimes have had thoughts which make me feel ashamed of myself.

I can think of no good reason for ever hitting anyone.

When I am angry, I sometimes sulk.

When someone is bossy, I do the opposite of what he asks.

I am irritated a great deal more than people are aware of.

I don't know any people that I downright hate.

22. There are a number of people who seem to dislike me very much.

23. I can't help getting into arguments when people disagree with me.

24. People who shirk on the job must feel guilty.

25. If somebody hits me first, I let him have it.

26. When I am mad, I sometimes slam doors.

27. I am always patient with others.

28. Occasionally when I am mad at someone I will give him the "silent treatment."

29. When I look back at what's happened to me, I can't help feeling mildly resentful.

30. There are a number of people who seem to be jealous of me.

31. I demand that people respect my rights.

32. It depresses me that I did not do more for my parents.

33. Whoever insults me or my family is asking for a fight.

34. I never play practical jokes.

35. It makes my blood boil to have someone make fun of me.

36. When people are bossy, I take my time just to show them.

37. Almost every week I see someone I dislike.

38. I sometimes have the feeling that others are laughing at me.

39. Even when my anger is aroused, I don't use "strong language."

40. I am concerned about being forgiven for my sins.

41. People who continually pester you are asking for a punch in the nose.

42. I sometimes pout when I don't get my own way.

43. If someone annoys me, I am apt to tell him what I think of him.

44. I often feel like a powder keg ready to explode.

45. Although I don't show it, I am sometimes eaten up with jealousy.

46. My motto is "Never trust strangers."

7. When people yell at me, I yell back.

8. I do many things that make me feel remorseful afterwards.

9. When I really lose my temper, I am capable of slapping someone.

0. Since the age of ten, I have never had a temper tantrum.

1. When I get mad, I say masty things.

2. I sometimes carry a chip on my shoulder.

3. If I let people see the way I feel, I'd be a hard person to get along with.

4. I commonly wonder what hidden reason another person may have for doing something nice for me.

5. I could not put someone in his place even if he needed it.

6. Failure gives me a feeling of remorse.

7. I get into fights about as often as the next person.

8. I can remember being so angry that I picked up the nearest thing and broke it.

9. I often make threats I don't mean to carry out.

0. I can't help being a little rude to people I don't like.

1. At times I feel I get a raw deal out of life.

2. I used to think that most people told the truth but now I know otherwise.

3. I generally cover up my poor opinion of others.

4. When I do wrong, my conscience punishes me severely.

5. If I have to resort to physical violence to defend my rights, I will.

6. If someone doesn't treat me right, I won't let it annoy me.

7. I have no enemies who really wish to harm me.

8. When arguing, I tend to raise my voice.

9. I often feel that I have not lived the right kind of life.

0. I have known people who have pushed me so far we came to blows.

71. I would rather concede a point than get into an argument about it.

72. I sometimes show my anger by banging on the table.

Appendix 2

ating of _____ Rank number _____
student number

You know reasonably well the person who gave you this brief question-
aire. For a class experiment, we would like to ask your opinion of his
aggressiveness." Obviously, this type of judgment can not be very precise,
ut a rough idea is all we need. To do this, write down (on the back of
his or on a scrap paper) the first name and last initial of 10 people of
our sex and generation that you know reasonably well, including the per-
on who gave you this questionnaire. Then rank these 10 people on their
aggressiveness" (defined below) in the following way. Place a 1 after the
ame of the person who is the most aggressive of the 10 people, in your
udgment. For the next most aggressive of the 10 assign a rank of 2, and
o on for all 10 people. Thus the least aggressive person will receive a
ank of 10. Then write in the blank space for rank number on the top of
he page, the rank that you assigned to the person who gave you this ques-
ionnaire. Do not write any name by which someone could identify any of
our friends. Just give your rank for the person whose subject number for
his experiment is written above.

Your rank listings might look like this:

ohn W.	7	Barry M.	3
erry S.	2	Chris T.	8
d B.	1	Greg B.	6
ohn E.	4	Chuck D.	5
eorge F.	9	Alan S.	10

If John E. gave you this questionnaire, you would write a 4 in the
ace for the rank number at the top of the page. That number is all we
ed.

"Aggressiveness is the tendency to engage in any of the following be-
viors:

1) physical violence directed at other people such as hitting, slapping, pushing, etc.

2) verbally expressing negative feelings such as insults, sarcasm, threats, cursing, etc. towards others, often by arguing

3) indirectly expressing negative feelings towards others by temper tantrums, slamming doors, breaking objects, malicious gossiping, etc.

Please rate the person who gave you this form on the following scales. For each scale place an X in the space that best describes the person. The scales are defined as 1, 2, and 3 above in the definition of aggressiveness.

1- Physical Aggressiveness

not at all	hardly	somewhat	quite	extremely

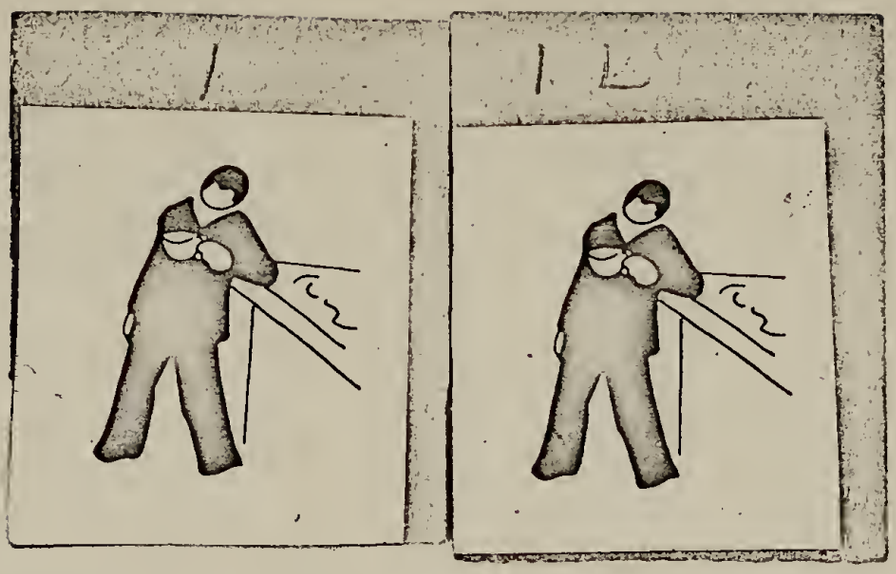
2- Verbal Aggressiveness

not at all	hardly	somewhat	quite	extremely

3- Indirect Aggressiveness

not at all	hardly	somewhat	quite	extremely

Place this form in the accompanying envelope, seal it, and return it to the person who gave it to you. He will return it to class. Thank you for your help.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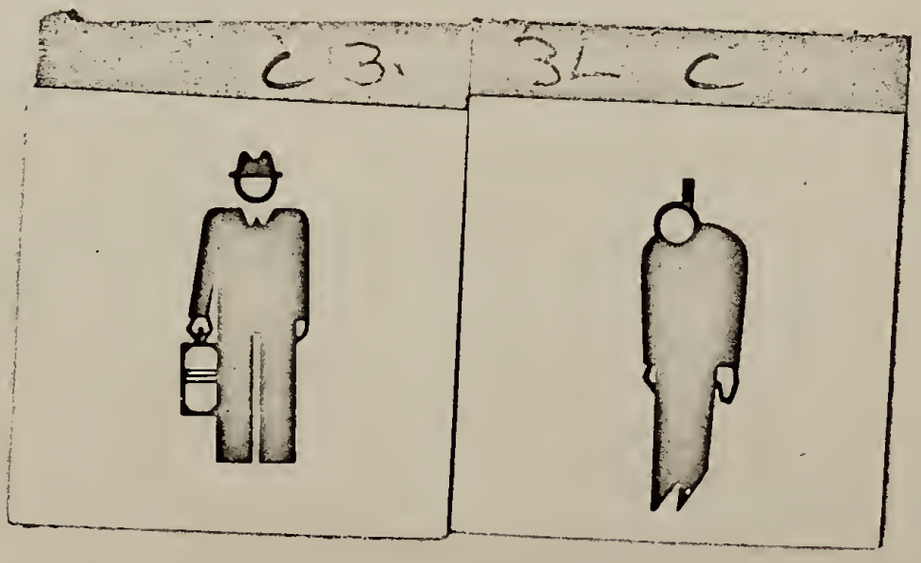
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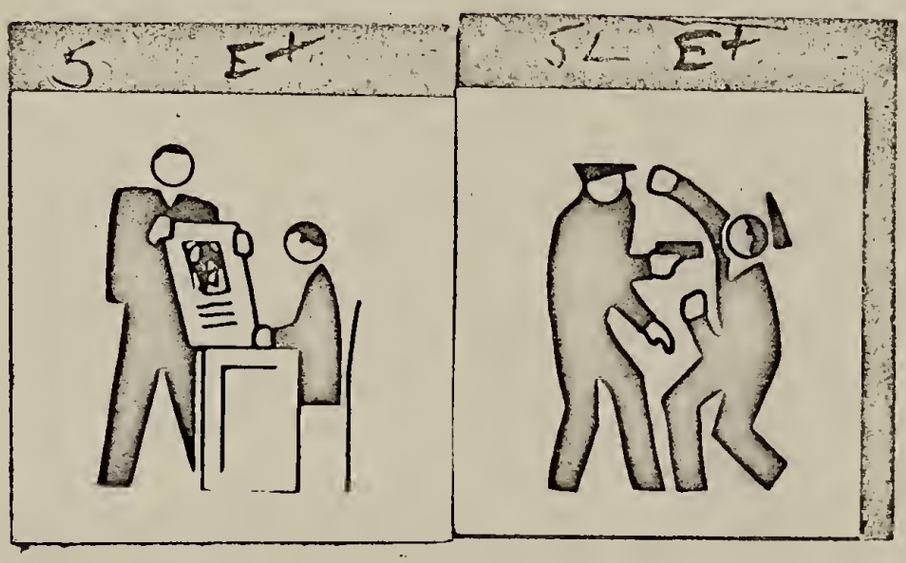
A 4
4L A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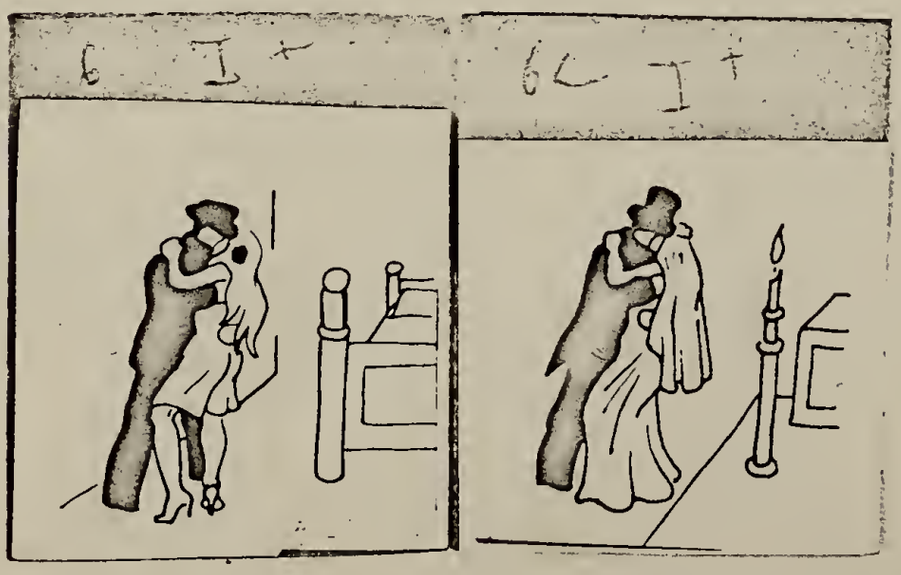
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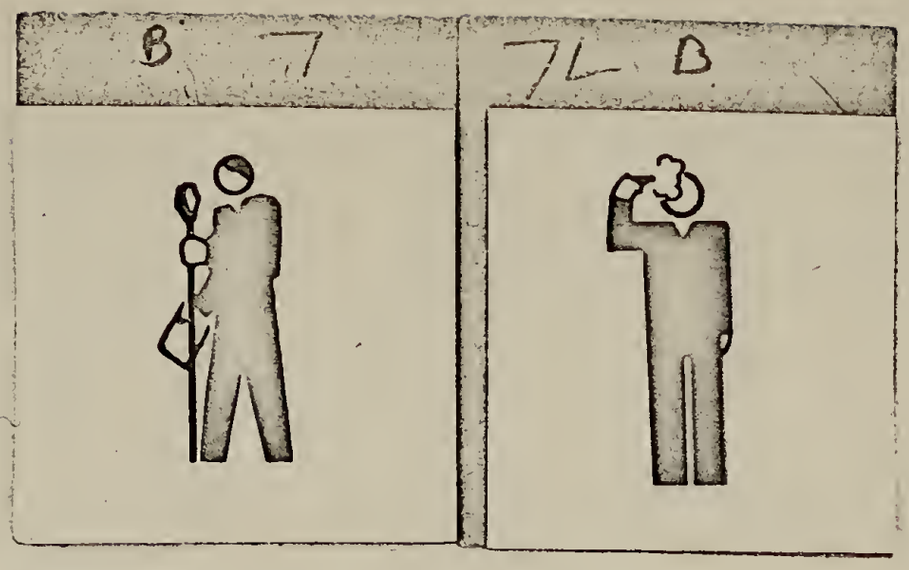

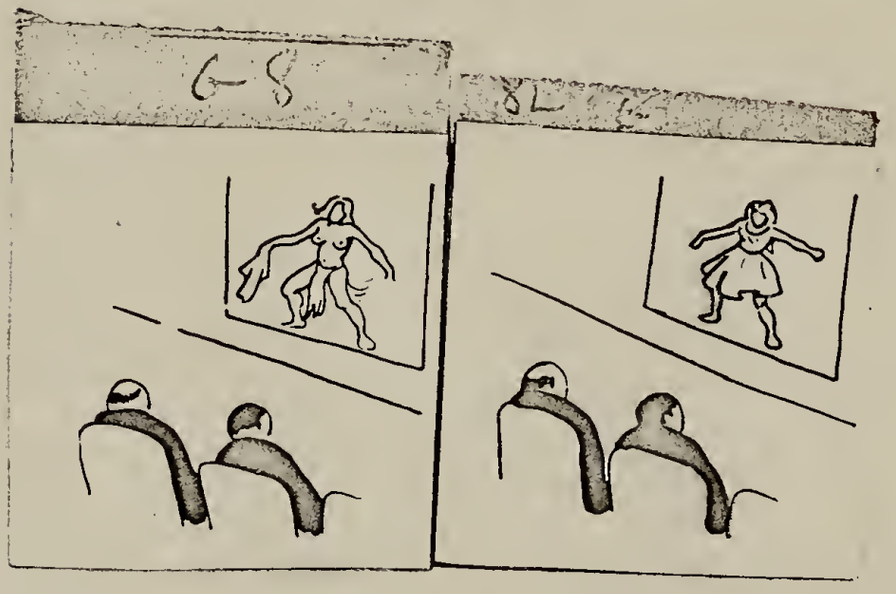

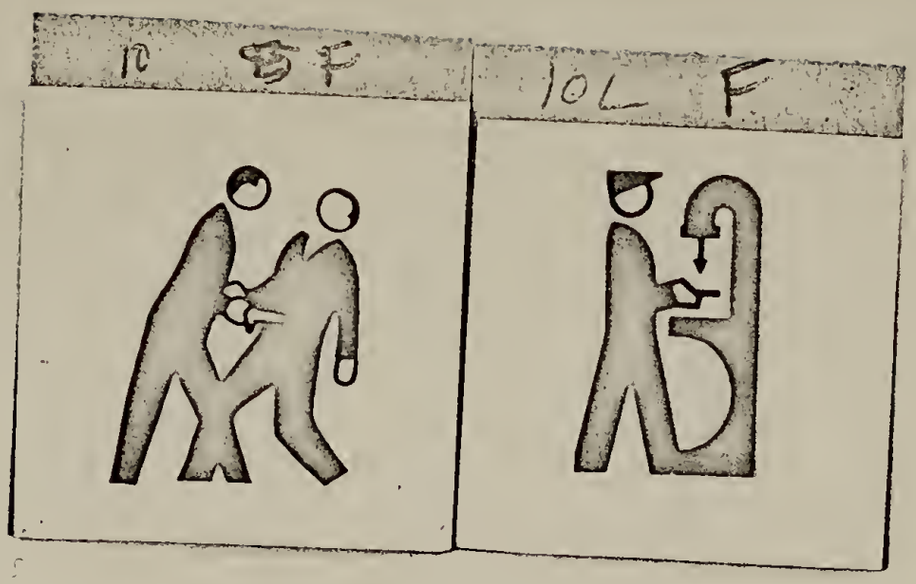
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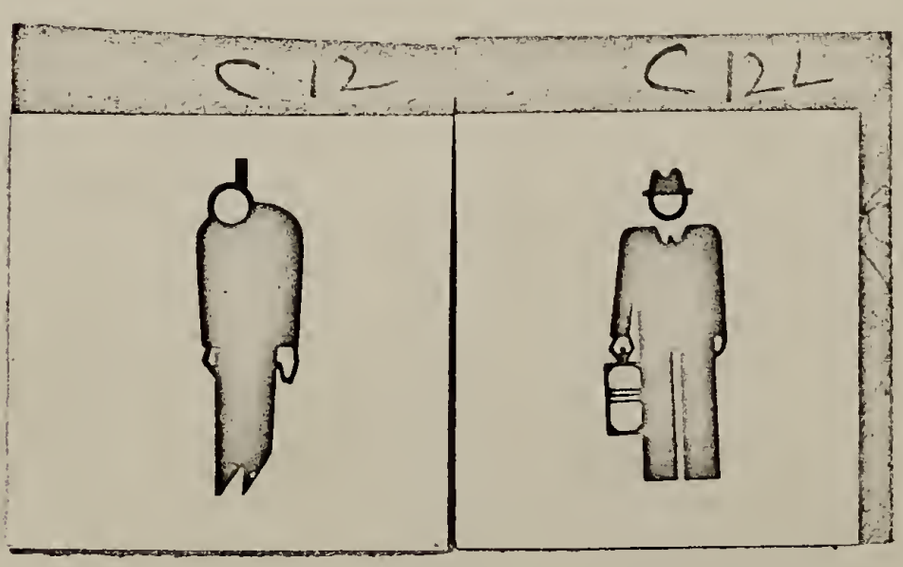
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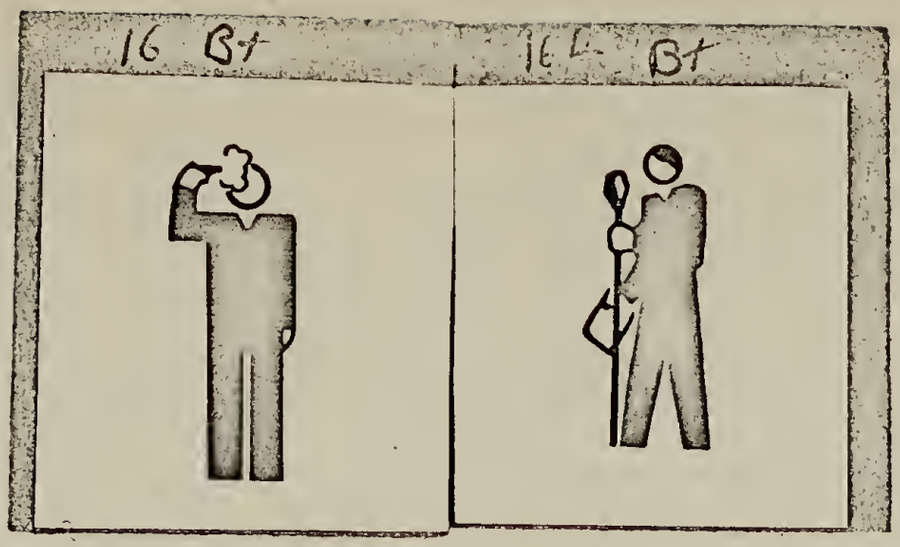
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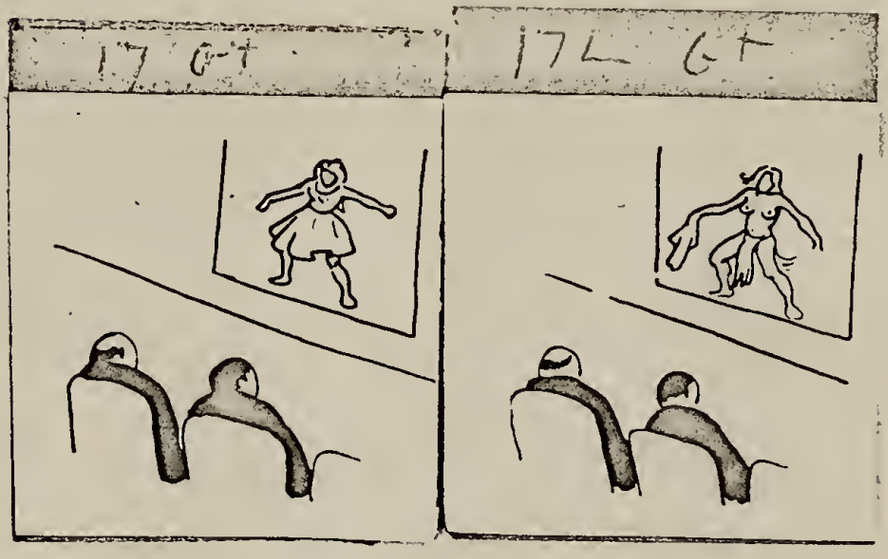
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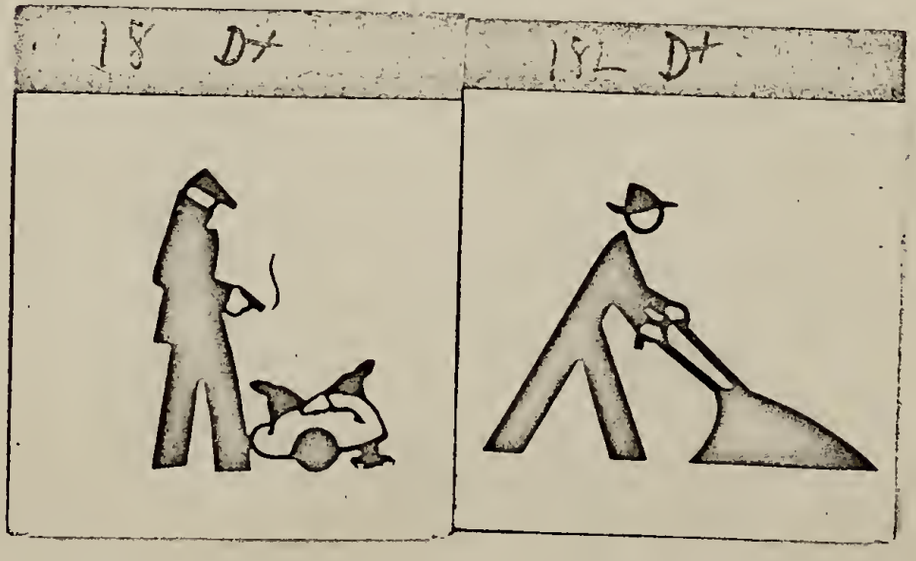
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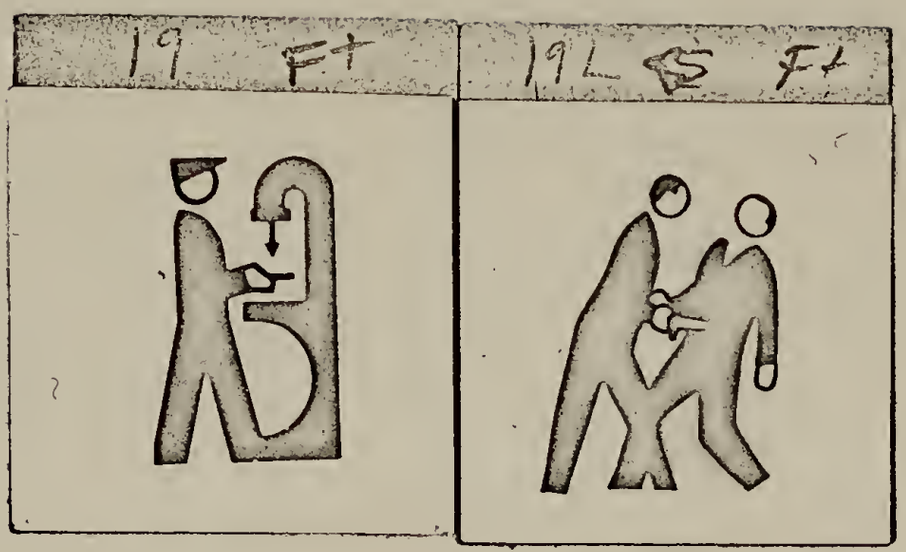
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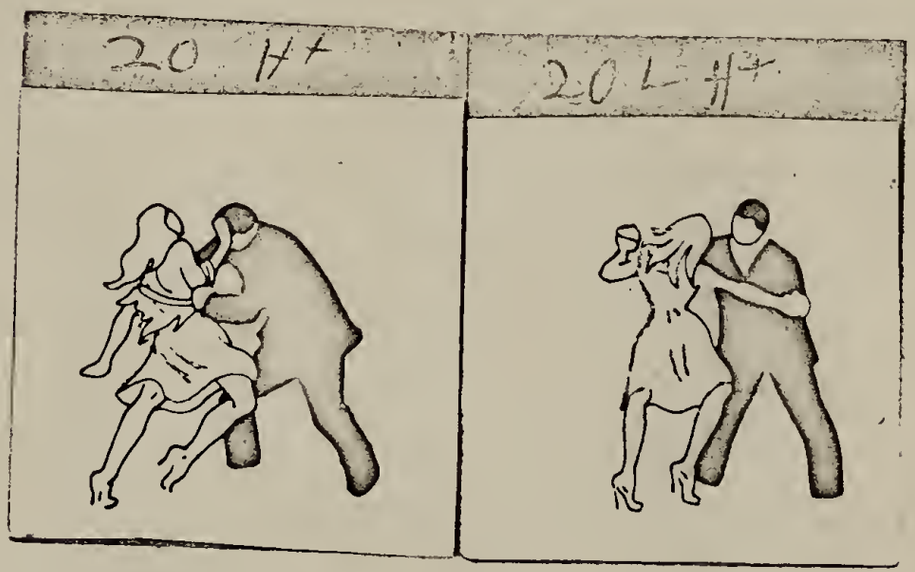
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Appendix 4

Subject _____ Score _____

Briefly describe what you saw.

Check the position on each scale that indicates the direction and intensity of the scene that you saw. Consider the positions on the scales as:

light	___ extremely	quite ___	___ slightly	neutral ___	___ slightly	quite ___	___ extremely	dark

kind	___	___	___	___ 0	___	___	___	cruel
strong	___	___	___	___ 0	___	___	___	weak
humorous	___	___	___	___ 0	___	___	___	serious
passive	___	___	___	___ 0	___	___	___	active
bad	___	___	___	___ 0	___	___	___	good
calm	___	___	___	___ 0	___	___	___	violent
ugly	___	___	___	___ 0	___	___	___	beautiful
soft	___	___	___	___ 0	___	___	___	hard
emotional	___	___	___	___ 0	___	___	___	unemotional

Appendix 5

Pearson-Product Moment Correlations
between Buss-Durkee Aggression Inventory Subscales
and Mean Peer Rankings of Aggression

	N	r
Combined	216	
Buss-Durkee Aggression Factor		.40
Physical Aggression		.36
Verbal Aggression		.34
Indirect Aggression		.24
Males	75	
Aggression Factor		.44
Physical Aggression		.43
Verbal Aggression		.30
Indirect Aggression		.34
Females	141	
Aggression Factor		.38
Physical Aggression		.32
Verbal Aggression		.37
Indirect Aggression		.16